Storm surge dynamics in the northern Adriatic Sea: comparing AI emulators with high-resolution numerical simulations

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SUPPLEMENTARY MATERIAL

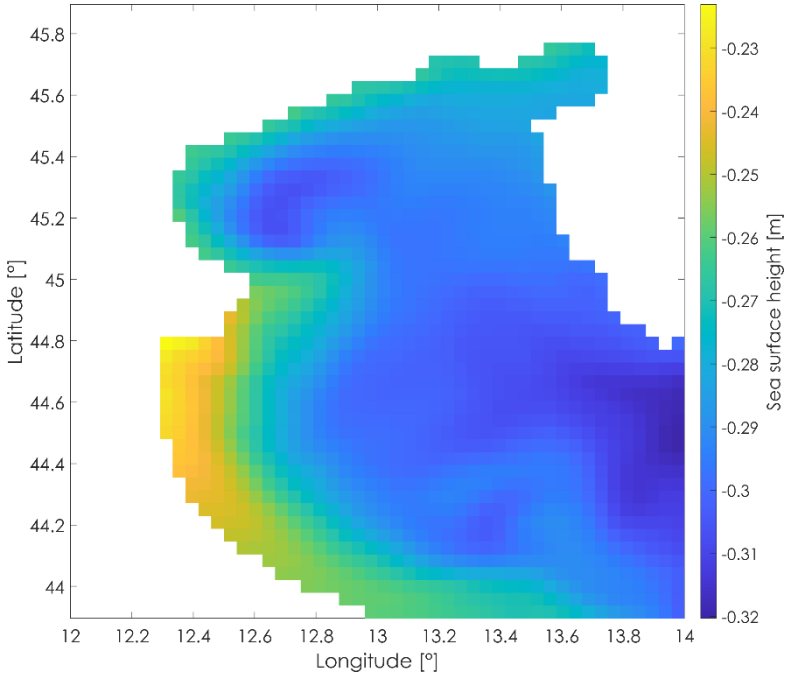

Figure S1: Spatial domain of predictors, exemplified by sea surface height at a random time from Med-MFC database.

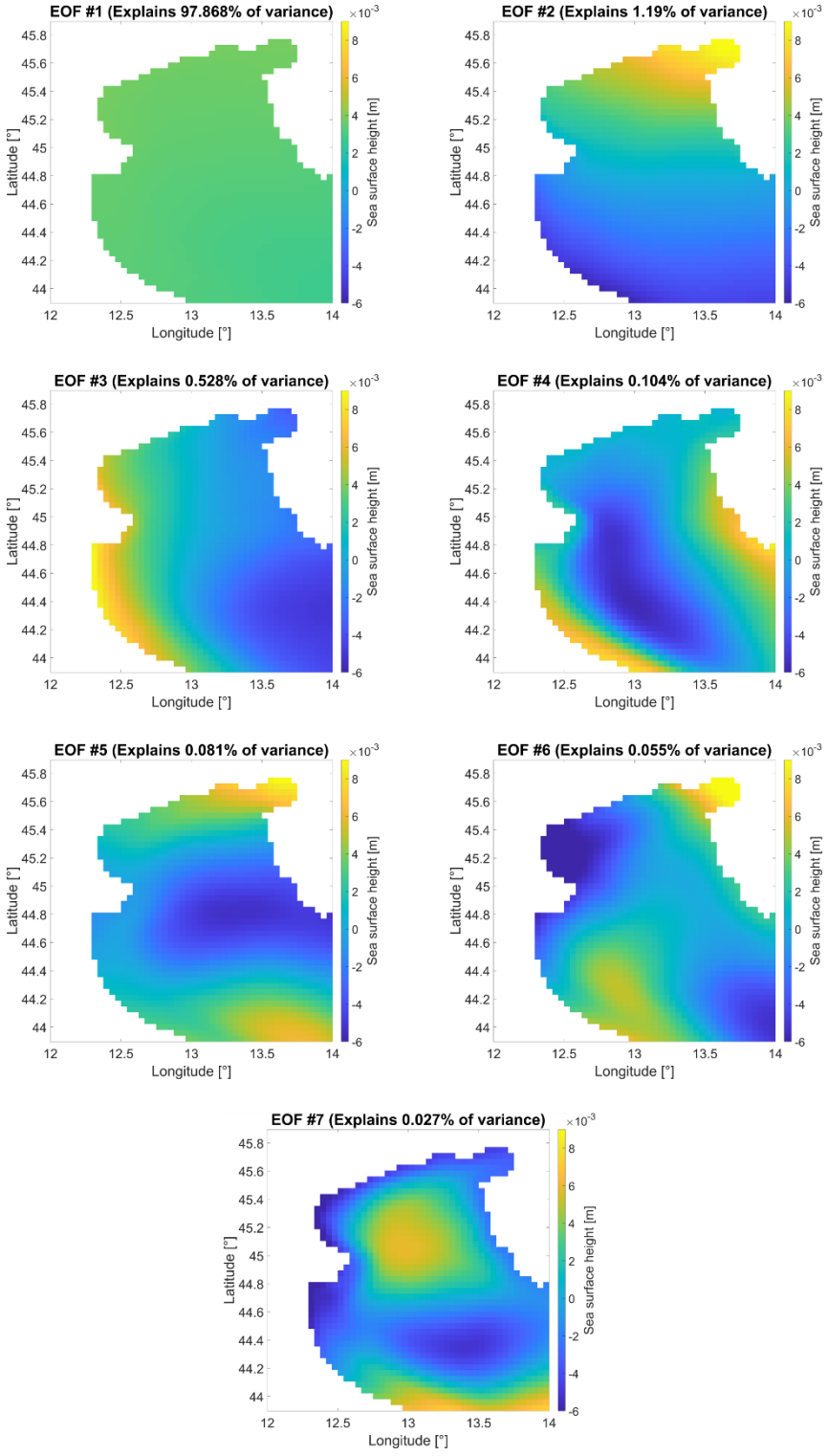

Figure S2: First seven Empirical Orthogonal Functions (EOFs) for sea surface height.

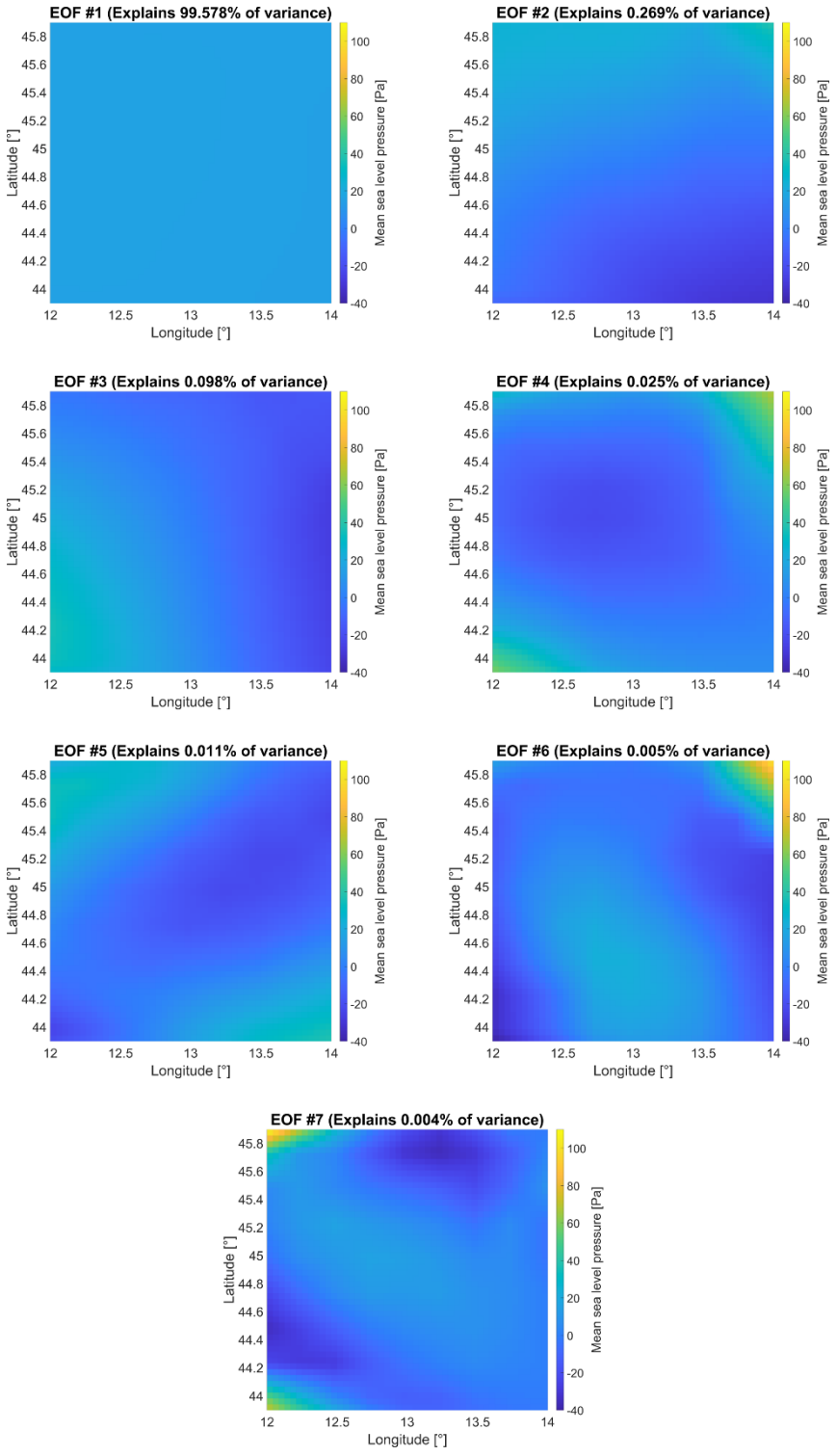

Figure S3: First seven Empirical Orthogonal Functions (EOFs) for mean sea level pressure.

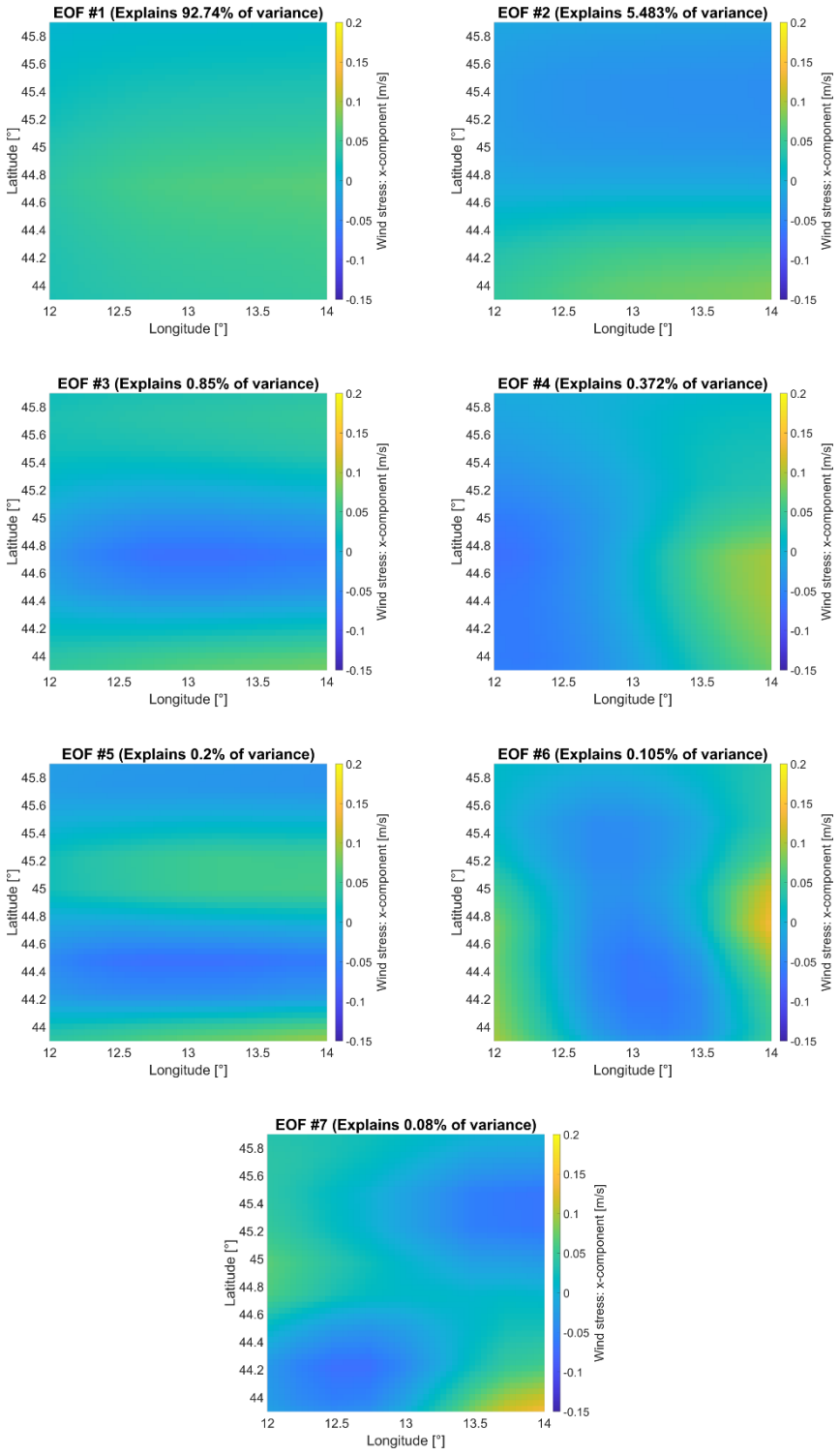

Figure S4: First seven Empirical Orthogonal Functions (EOFs) for x-component of wind stress.

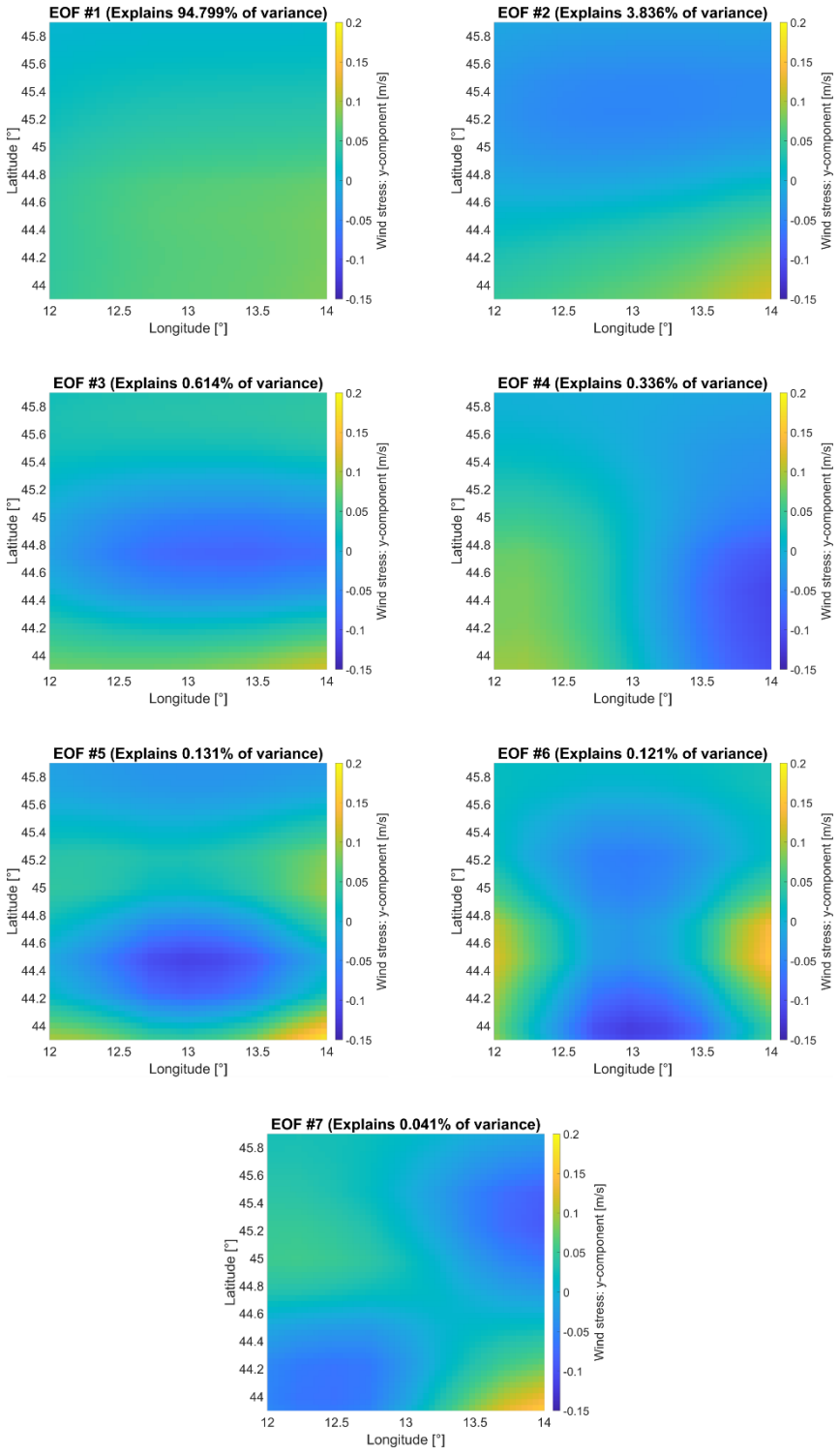

Figure S5: First seven Empirical Orthogonal Functions (EOFs) for y-component of wind stress.

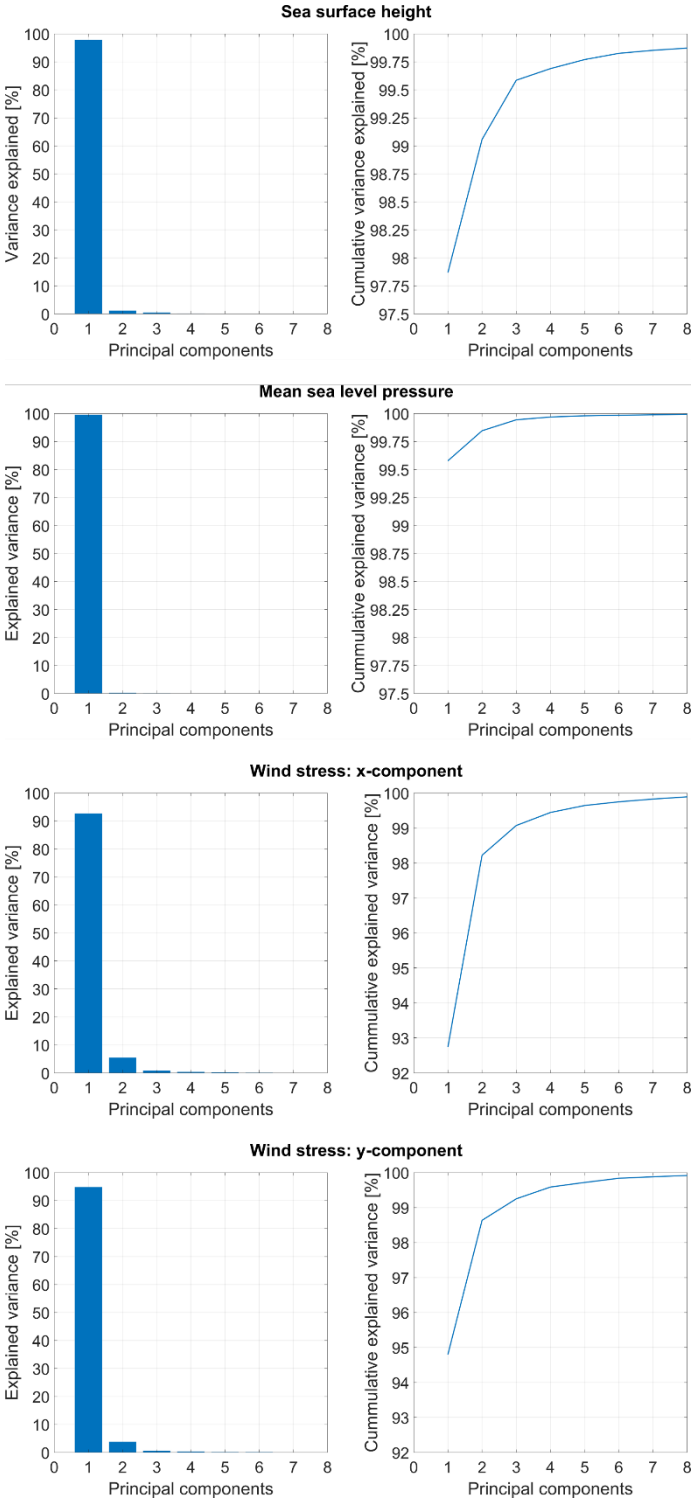

Figure S6: Explained variance of each principal component and cumulative explained variance for the predictors.

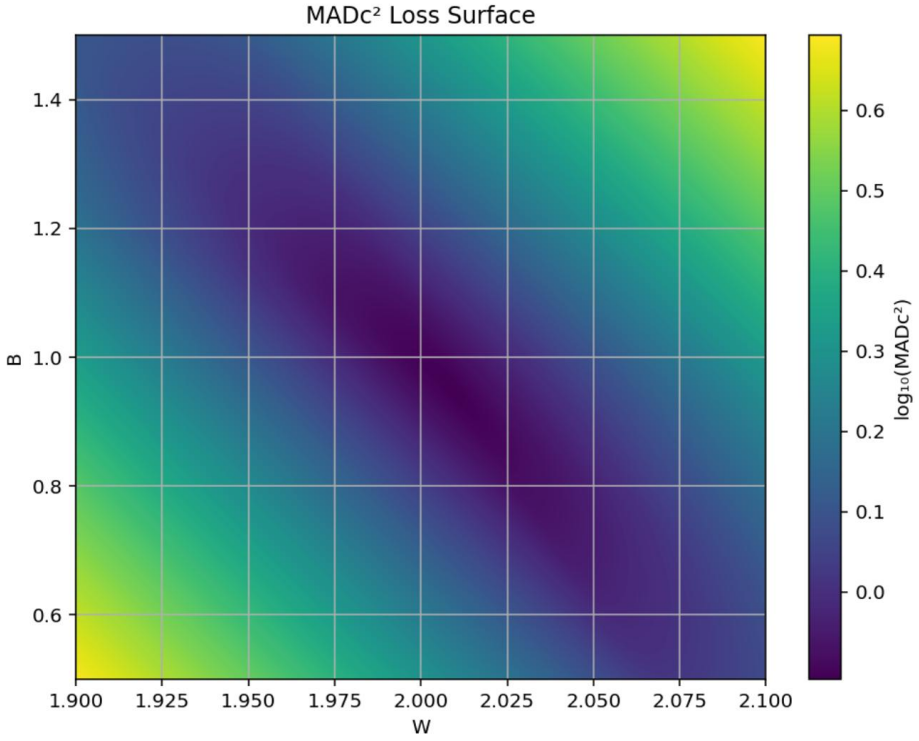

Figure S7: First seven Empirical Orthogonal Functions (EOFs) for meridional wind.

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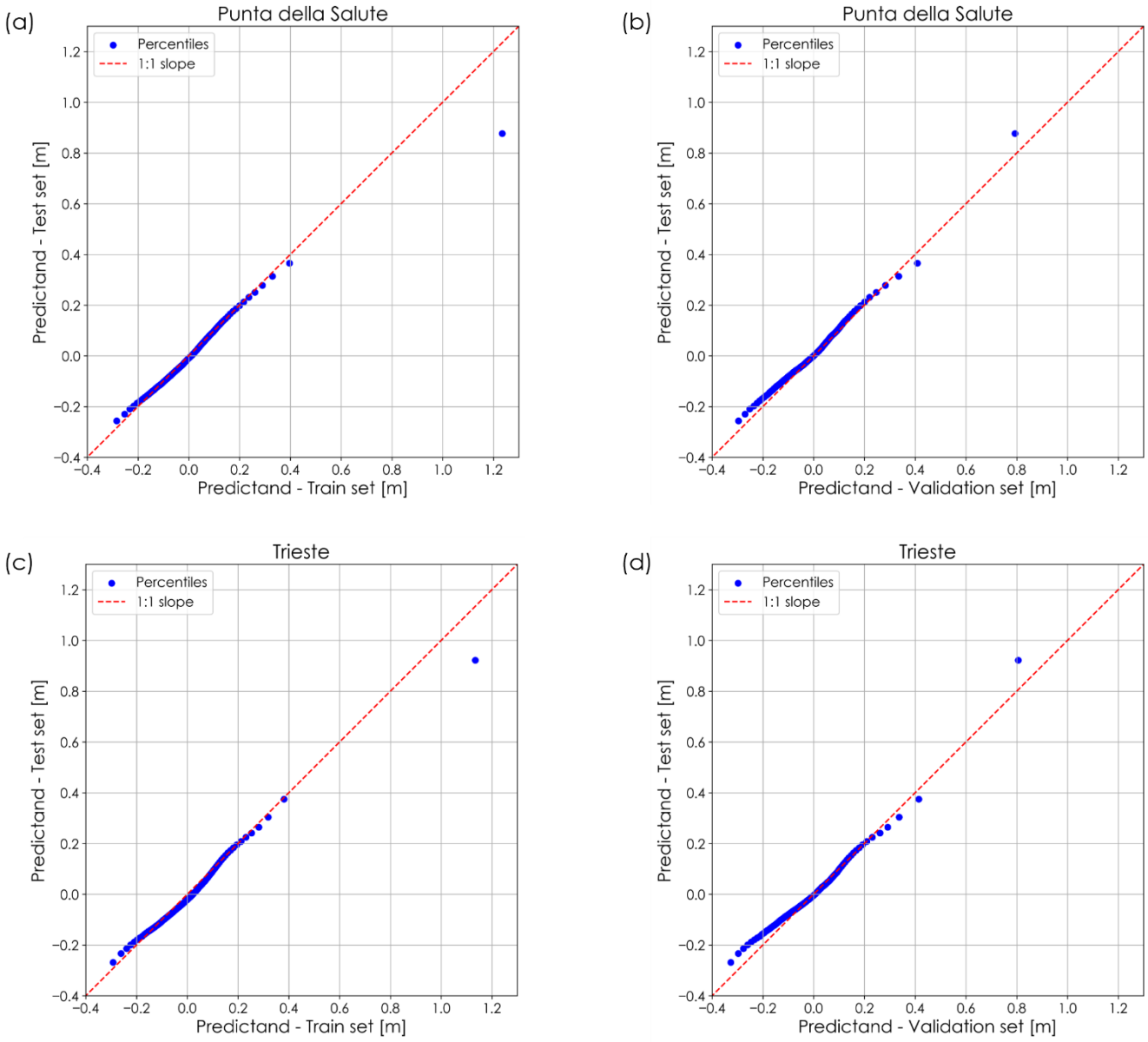

Figure S8: Percentiles comparison between training and test sets (a and c) and validation and test sets (b and d).

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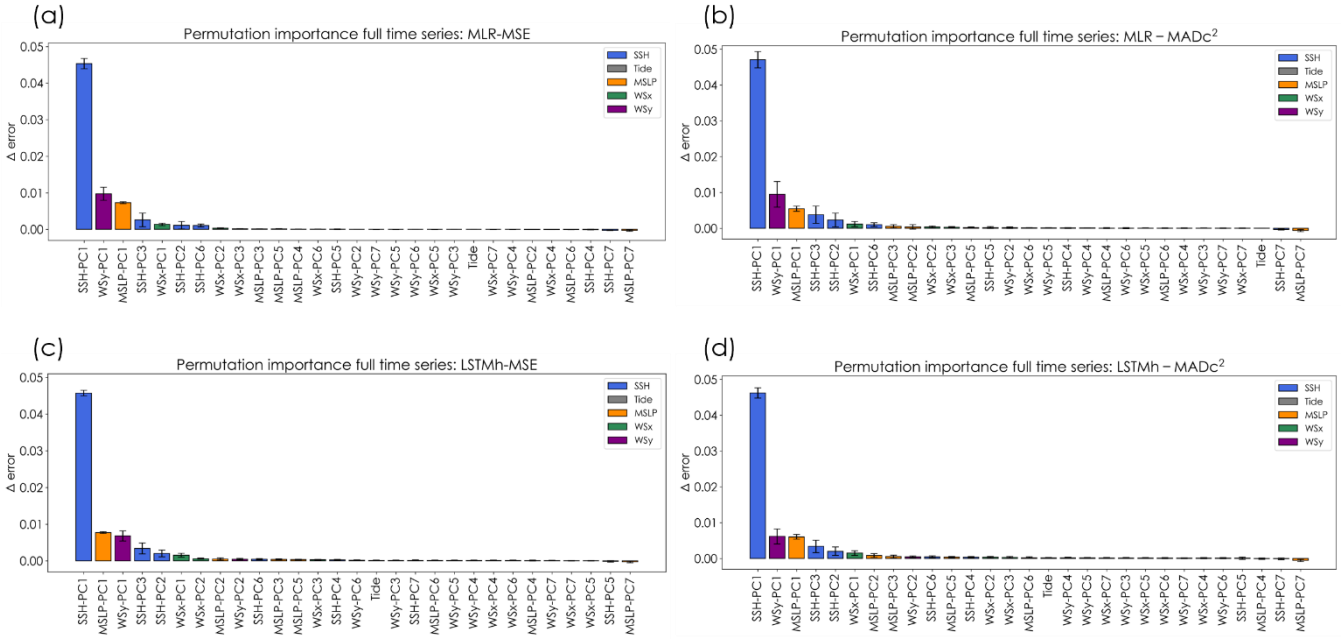

Figure S9: Permutation importance averaged by locations for full time series. (a) MLR-MSE, (b) MLR- MADc^2, (c) LSTMh-MSE, and (d) LSTMh- MADc^2.

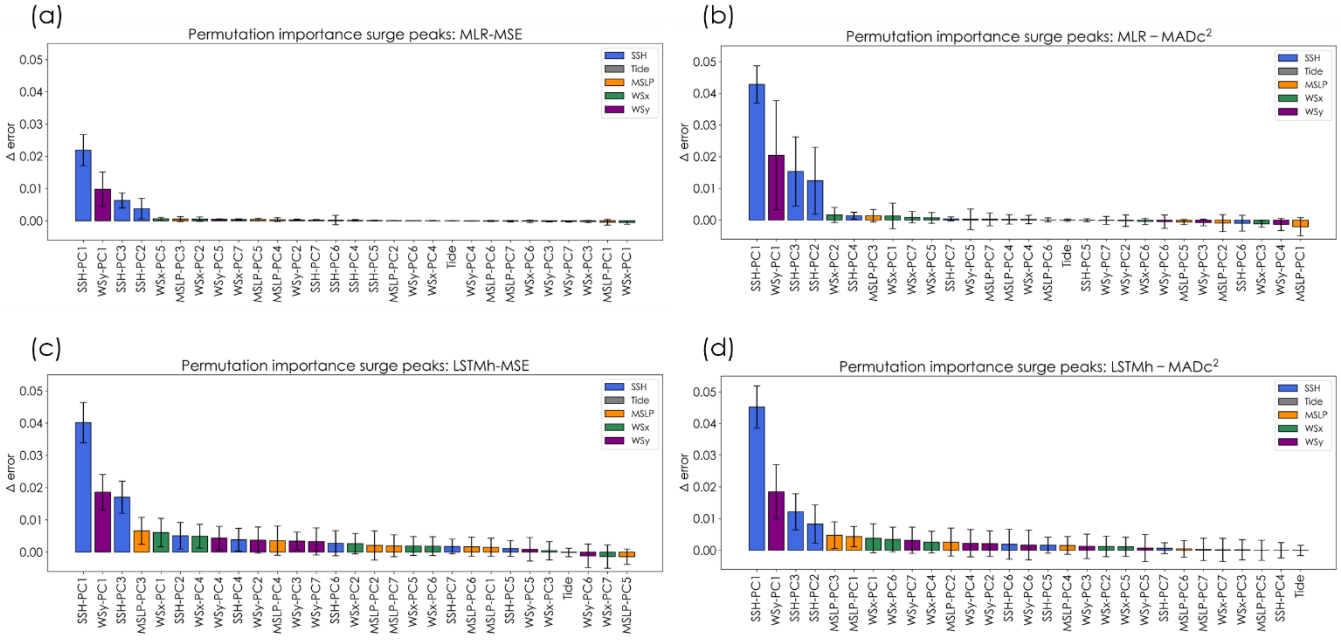

Figure S10: Permutation importance averaged by locations for surge peaks above 99th percentile. (a) MLR-MSE, (b) MLR-MADc^2, (c) LSTMh-MSE, and (d) LSTMh- MADc^2.